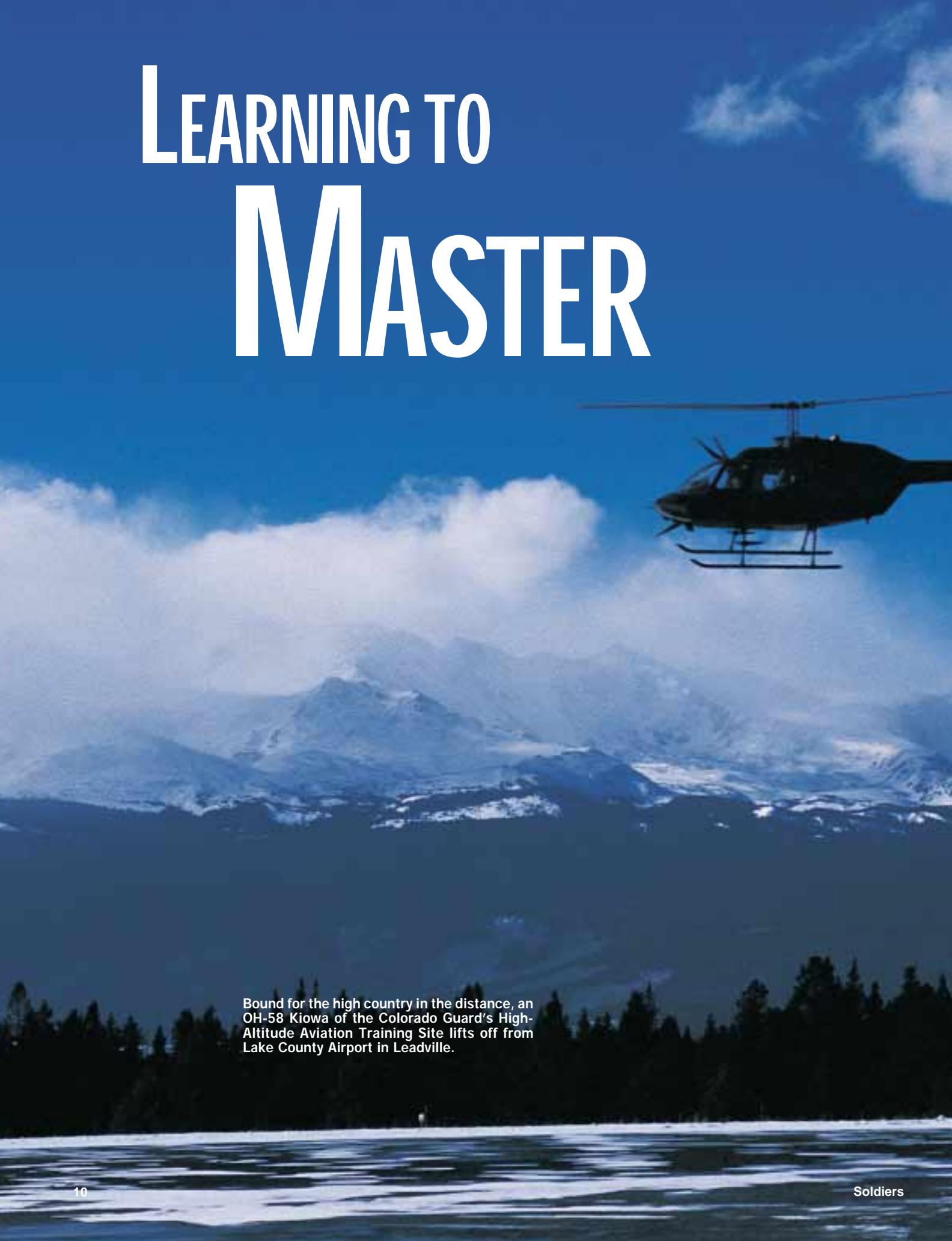


LEARNING TO MASTER

A black OH-58 Kiowa helicopter is shown in flight, moving from right to left across the upper right portion of the frame. The background features a vast, high-altitude landscape with snow-covered mountain peaks and a dense forest of evergreen trees in the foreground. The sky is a deep blue with scattered white clouds. The overall scene conveys a sense of high-altitude military training.

Bound for the high country in the distance, an OH-58 Kiowa of the Colorado Guard's High-Altitude Aviation Training Site lifts off from Lake County Airport in Leadville.

Combat operations in Afghanistan have underscored the value of the graduate-level training offered by the Colorado Army National Guard's High-Altitude Army Aviation Training Site.

THE MOUNTAINS

Story and Photos by Steve Harding





Master Sgt. Keith Reed, USAF

Army aviators — such as the pilots of these CH-47s being loaded at Afghanistan's Kandahar Airport — routinely face mountains and “hot and high” conditions.

THE small patch of stoney ground isn't what you'd call an ideal helicopter landing zone.

Wedged between two rocky outcroppings atop a Colorado mountain, the space is mantled in crusted snow and scoured by icy winds. Visibility shifts from excellent to dismal and back again within seconds as dazzling sunlight alternates with heavy clouds. It's a starkly beautiful and potentially deadly spot, and it's one of CW4 John E. Ogburn's favorite places to bring student pilots.

Ogburn is an instructor pilot and standardization officer for the Colorado Army National Guard's High-Altitude Army Aviation Training Site, and a landing and takeoff from a small clearing near the summit of a high peak is a staple of HAATS'

unique and highly regarded mountain-flying course.

Open to active and reserve-component Army aviators, pilots from other U.S. services and members of certain foreign militaries, the five-day course offers what HAATS' commander, LTC Joel Best, described as “graduate-level aviation training.”

≡ A Unique Curriculum

Located in a small hangar-and-classroom complex at the civil airport in Eagle, Colo., HAATS was established in 1985 to teach Colorado Guard aviators how to better operate in their state's rugged terrain and often extreme weather conditions. As the only U.S. military school teaching the specialized techniques of mountain helicopter flying, HAATS quickly developed a broad following throughout the nation's military.

“The widespread interest in what we teach is only logical,” Best said, “when you realize that from the very

“We ask our aviators to fly helicopters loaded to their maximum gross weights, at night and in bad weather, wearing night-vision goggles, in rugged terrain.”

beginning of the U.S. military's use of helicopters, we have flown them in mountains. The whole concept of ‘air mobility’ evolved because we needed a way to move people and equipment through areas that were too rugged for ground vehicles, or that had no roads.”

“From Vietnam to Afghanistan, ‘high, hot and heavy’ operations have been the rule, not the exception,” added CW5 Mike Moore, one of HAATS' instructors. “We ask our aviators to fly helicopters loaded to their maximum gross weights, at night





SPC David Marck Jr.

Even the most capable of the Army's helicopters, like these CH-47s leaving Afghanistan's Bagram Airfield, face increasing power limitations as they climb into the mountains.

and in bad weather, wearing night-vision goggles, in rugged terrain."

Moreover, Best said, Army helicopter pilots are also expected to fly in high-density-altitude conditions.

"Simply put, at higher elevations and in warmer temperatures an aircraft's engine puts out less power, reducing the aircraft's maneuverability and limiting the load it can carry," he said.

Both are of critical importance to Army aviators, who are routinely tasked to transport people and cargo under conditions that would keep commercial aircraft firmly on the ground.

Being highly motivated and what might best be described as "extremely self-confident," Army aviators will do their absolute best to accomplish any assigned mission, Best said. But no amount of enthusiasm will overcome the tremendous challenges presented by high-altitude or high-density-altitude operations.

"You just cannot take young aviators who've flown at or near sea level for their entire careers and expect them to be able to safely and effectively insert a special operations team into a 16,000-foot-high landing zone in Afghanistan, at night, in bad weather," Best said. "That's a recipe for disaster, because they'll be completely overwhelmed."

HAATS' instructors see it as their responsibility to pass on the knowledge that will allow pilots to overcome the mountains' many challenges.

During HAATS' ground school, aviators review the principles they'll later put into practice during a week of training flights.

And the key to that knowledge, Best said, is a process called "power management."

≡ It's All About Power

Though there are many skills that are especially important in mountain flying — a keen eye for weather, for example, and the ability to "read" the winds moving around a particular terrain feature — the HAATS pilots feel that the most vital is understanding an aircraft's power limits.

"A helicopter has a certain performance capability at sea level," Moore said. "The engine will put out a certain amount of power and the helicopter will be able to lift itself and a certain load. At higher elevations, or in extremely hot environments, the aircraft's performance is considerably lessened."

One of the most common causes of

military helicopter accidents, Best added, is a pilot who thinks he has enough power available to perform a certain maneuver or get out of a particular situation, and then finds too late that he doesn't.

"Pilots get used to flying their aircraft in a particular way at sea level, because there they can usually power their way out of most situations," Best said. "But then they deploy to a high-altitude or high-density-altitude area and they quickly find they don't have that luxury."

Helicopter instructor pilots have always found ways to force their students to think about, and deal with, power limitations, Moore said. Sometimes it was as simple as the instructor limiting how far the student pilot could turn the aircraft's twist-grip throttle, and sometimes it was as potentially dangerous as loading the student's helicopter with ballast so that the aircraft actually was operating at its maximum gross weight.

"The problem with that approach, of course, was that the pilot really was out of power, and if he made a mistake, he crashed," Moore said. "That's not a real good training plan when you're dealing with new, inexperienced pilots."

The Colorado Guard's more





systematic — and considerably safer — approach to teaching power-limited flying techniques grew out of a 1985 request from the North Dakota Army Guard. That state was preparing to deploy Guard helicopters to Honduras to support ongoing humanitarian-relief operations, and asked for Colorado's help in preparing pilots for the challenges of flying in the mountainous Central American nation. At that time Honduras was the site of more Class A accidents — the kind that result in the complete destruction of the aircraft and/or the death of crew or passengers — than anywhere else Army helicopters operated, so it was not an idle request.

Moore and the other aviators at what was then called the Colorado High-Altitude Training Center taught the North Dakotans some useful mountain-flying techniques, and the small facility in Eagle soon became a required stop for most Army Guard and many active-duty pilots bound for operations anywhere in U.S. Southern Command's vast area of operations.

"In the process of teaching mountain flying to all these folks over the next few years, we realized that many of them lacked a fundamental grasp of power usage in helicopters," Moore said. "So over time we developed this systematic approach to teaching power management, and we think it has greatly improved the overall skills of the pilots who've been exposed to it."

≡ More Than Numbers

Army pilots use what's known as "tabular data" to predict their aircraft's performance under known conditions. These data, which are listed in table form at the back of the operator's manual for each type of aircraft, allow the pilot to develop a formula that tells him how much power is actually

Want more info?

For more on HAATS, including course entry requirements and the school's ATRRS School Code number, visit the Web site at www.coloradoguard.com/armg/haats.htm.



A hovering UH-1 is almost obscured by the snow kicked up by its rotors — another potential hazard of mountain flying that aviators must learn to overcome.

available and provides a framework for using that power most effectively under varying circumstances.

"But power management isn't just the 'tab data' in the back of the manual," Moore said. "It's a method of making you aware of all the other things that affect the aircraft. The main thrust is allowing the pilot to understand as much as possible about himself, the aircraft and the environment."

And once pilots have a quantifiable and foolproof method with which to predict their aircraft's performance in any situation, Best said, they are better able to deal with the other challenges of high-altitude flight.

≡ The Course

The entire HAATS operation is undertaken by just 18 people — eight pilots, nine mechanics and a flight-operations NCO. Yet in spite of its small size, the organization trained 269 people in 2001 — the majority of them active Army, Army Reserve and Army National Guard. However, there were also 15 pilots from other countries and aviators from the other U.S. military services.

The HAATS program focuses primarily on the UH-1, OH-58, UH-60 and CH-47. The facility has its own

The HAATS program focuses primarily on the UH-1, OH-58, UH-60 and CH-47. The facility has its own OH-58s and UH-1s; operators of the other types bring their aircraft with them.

OH-58s and UH-1s; pilots of the other types bring their aircraft with them. The five-day course consists of one ground-school day and four days of flying. On the flight days the students put into practice the knowledge and techniques they learned in the classroom.

"This is a 'crawl-walk-run' process," Best said. "Given the range of terrain in this area, we can select the appropriate start point for each student, based on individual ability and skill level. If they have an excellent grasp of the academic concepts and some real-world experience from a place like Alaska or Korea, we can jump right



into the really dynamic training.”

And that training — which can include such things as landings and takeoffs from narrow rock pinnacles and from mountain-top sites — is often a real eye-opener for the participants, many of whom are senior aviators with thousands of hours of flight time gained all over the world.

“I flew search-and-rescue missions in the mountains of the Pacific Northwest for four years,” said course participant CW2 Randy Jackson, “and I didn’t learn things in all that time that I learned on the first day here at HAATS.”

Jackson and CW4 John Roberg, both of the California Army National Guard’s Company C, 1st Battalion, 140th Aviation Regiment, found the course to be both interesting and of tremendous practical value.

“As California Guard aviators we fly everywhere from sea level to the tops of 11,000-foot mountains,” Roberg said. “One of the things this course reminded us of was that we can run into the same power limitations at 3,000 feet on a really hot day in the Mojave Desert as someone else might encounter at 15,000 feet in the high Rocky Mountains. This has been really useful, and we’ll definitely take these techniques back to the other pilots in our unit.”



Instructor CW4 John Ogburn (*center*) makes a point to CW4 John Roberg (*right*) as CW2 Randy Jackson recalculates their Huey’s performance.

≡ Passing the Knowledge On

Though the HAATS members know their one-week course won’t produce any master mountain aviators, they’re proud of what they do and thankful for the chance to pass on what they know.

“When you’ve amassed the wealth of mountain-flying and power-management knowledge and talent that we have here,” Best said, “it’s something you want to share. Especially since the knowledge and skills that we pass on

can prevent the loss of lives and millions of dollars worth of aircraft.”

“The most rewarding part of this job is when you see that little light bulb go off above a student’s head,” Moore added. “It’s particularly rewarding when the instructor pilots from the units ‘get it,’ because they’ll take the knowledge back and teach it in their units. And the more pilots who understand and use our methods, the fewer people and aircraft we’ll lose. It’s as simple as that.” □